

STATE OF ALASKA

Jay S. Hammond, Governor

Annual Performance Report for

EVALUATION OF INTERIOR ALASKA WATERS
AND SPORT FISH WITH EMPHASIS ON
MANAGED WATERS - FAIRBANKS DISTRICT

by

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Job No. G-III-H Evaluation of Interior Alaska Waters and Sport Fish
 with Emphasis on Managed Waters - Fairbanks District
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RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations
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Job No.: G-III-H Job Title: Evaluation of Interior Alaska
Waters and Sport Fish with
Emphasis on Managed Waters -
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Cooperator: Michael J. Kramer

Period Covered: July 1, 1980 to June 30, 1981

ABSTRACT

Late winter dissolved oxygen readings were taken on eighteen area lakes in 1980. Six of these lakes are currently managed by Sport Fish Division. All six managed lakes had sufficient oxygen to overwinter fish. Thirty lakes were sampled to evaluate species composition and growth. A creel census conducted on the Chatanika River during the whitefish, Coregonus sp., spearing season in September and October indicated that 552 fishermen spent 1,026 hours to harvest 1,587 whitefish.

One lake in the area was chemically treated to remove a stunted northern pike population and four lakes were stocked in the Fairbanks area during 1980 with a total of 98,001 rainbow trout, Salmo gairdneri, Richardson, and 99,840 coho salmon, Oncorhynchus kisutch (Walbaum).

BACKGROUND

The Fairbanks management area of approximately 52,000 sq mi includes waters of the Tanana drainage from the Little Delta River downstream to the Tanana River mouth, including roadside waters of the Parks Highway south to the Denali Highway, the Richardson Highway south to Birch Lake, the Steese and Elliott Highways, and the Chena Hot Springs Road. Also in the area are all north-flowing tributaries of the upper Yukon River from Tanana to the Canadian Border. Figure 1 does not show the entire Fairbanks management area, only that part of the lower Tanana River where most of the field work for this report was accomplished.

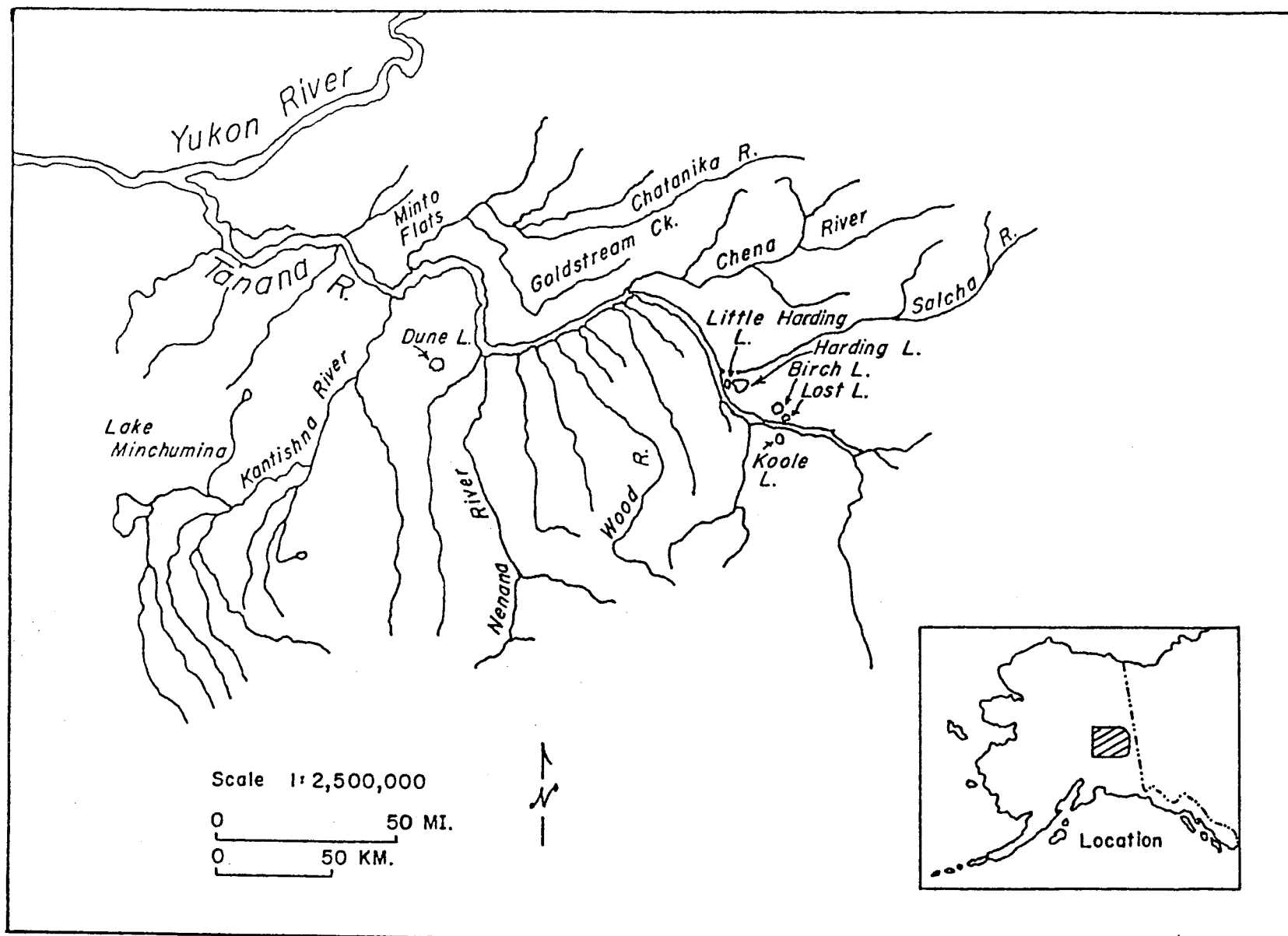


Figure 1. Location map of lower Tanana River Study Area.

This area includes some of the most highly used fisheries in the Interior, including the Chena, Chatanika, and Salcha Rivers, Minto Flats and Harding and Birch Lakes. There are many popular fly-in lakes in the Tanana Flats. Communities served include Fairbanks, North Pole, Central, Circle, Eagle, Livengood, Minto, Manley Hot Springs, Rampart, Nenana, Anderson, Healy and Cantwell. Fort Wainwright Army Post, Eielson Air Force Base, and Clear Air Force Site are also included in this area.

The climate is one of harsh contrasts, with spring coming as early as mid April and snowfall, with subfreezing temperatures, occurring as late as June. The short, 3-month summers are characterized by long daylight hours and temperatures occasionally exceeding 90°F. The fall extends through early November with snowfall and decreasing temperatures. During the dead of winter from mid-November to mid-March, temperatures may plummet below -70°F. Annual precipitation averages around 11 inches, with most falling between June and September.

The lakes are generally iced-over by late October and breakup can occur as late as June. Seasonal surface runoff streams flow from May through September, due to periods of spring ice melt and later summer rains. The streams, fed by groundwater or springs, may either run with marginal ice cover, or occasionally form glaciers over the streambed.

The Tanana Valley is relatively unglaciated. However, large quantities of gravel, sand and silt are discharged by nearby glacial melt. Lake formation occurs either from the damming of drainages leading from nearby hills, by silt from the Tanana River, by the melting of a former ice mass buried in the subglacial soil, or by the melt of permafrost brought upon by vegetative disturbance. Yearly precipitation regulates the levels of the majority of lakes, with only those near the Tanana subject to fluctuation by river-regulated water tables.

Creel census studies are conducted on all high-use fisheries in the area including the Chatanika, Salcha, Little Salcha, and Chena Rivers, Badger Slough, Minto Flats and stocked lakes such as Birch, Harding, Little Harding, and Lost Lakes.

Nearly all of the important waters near the major road systems have been surveyed. A number of fly-in waters have not been surveyed or need additional data. Future emphasis will be placed on surveys of lower Tanana drainage waters. Data will be collected on previously unsurveyed waters and files will be updated on waters previously surveyed. Table 1 contains scientific and common names and abbreviations of all fish mentioned in this report.

Fisheries are currently maintained in 27 lakes and ponds in the management area by stocking rainbow trout, coho salmon and grayling. Most waters stocked are adjacent to the road system; however, several remote lakes, accessible only by snowmachine or aircraft, have also been stocked with rainbow trout, coho salmon, and grayling. The remote water stocking program is well received by sportsmen.

Table 1. Scientific and common names of fish mentioned in this report.

Common Name	Scientific Name	Abbreviation
Round whitefish	<u>Prosopium cylindraceum</u> (Pallas)	RWF
Humpback whitefish	<u>Coregonus pidschian</u> (Gmelin)	HWF
Least cisco	<u>Coregonus sardinella</u> Valenciennes	LCI
Coho salmon	<u>Oncorhynchus kisutch</u> (Walbaum)	SS
Rainbow trout	<u>Salmo gairdneri</u> Richardson	RT
Arctic grayling	<u>Thymallus arcticus</u> (Pallas)	GR
Northern pike	<u>Esox lucius</u> (Linnaeus)	NP
Longnose sucker	<u>Catostomus catostomus</u> (Forster)	LNS
Sheefish	<u>Stenodus leucichthys</u> (Güldenstadt)	SF
Burbot	<u>Lota lota</u> (Linnaeus)	BB
Lake chub	<u>Couesius plumbeus</u> (Agassiz)	LC

RECOMMENDATIONS

1. Stocking success in area lakes stocked with rainbow trout, coho salmon or grayling, should be evaluated.
2. Creel census efforts on selected high use sport fisheries should continue.
3. Whitefish population estimates should be conducted in selected segments of the Chatanika River.

OBJECTIVES

1. To evaluate stocking policies for grayling, rainbow trout and coho salmon and formulate stocking recommendations for optimum survival and growth.
2. To obtain estimates of angler use and sport fish harvest on the Chatanika River whitefish fishery.
3. To obtain a population estimate of whitefish in selected areas of the Chatanika River.
4. To continue surveys of lower Tanana and middle Yukon River waters.

TECHNIQUES USED

Scales used for age determination were cleaned and mounted between glass slides. A Bruning 200 microfiche reader was used to read the scales. All fish were measured for fork length in millimeters. Water samples for dissolved oxygen readings were collected using a Kemmerer water sampler and analysis was done with a Hach Model AL-36-WR kit. Graduated mesh monofilament and multifilament gill nets, 125 ft x 6 ft with five mesh sizes ranging from 1/2 in to 2 1/2 in bar measure were used to sample fish populations.

FINDINGS

Dissolved Oxygen Testing

Eighteen Interior waters were tested for dissolved oxygen content during the winter of 1980. Six of these lakes are managed by the Sport Fish Division. All six lakes currently managed for sport fishing had sufficient oxygen to overwinter fish (Table 2). Only two lakes were depleted of oxygen or had levels so low as to preclude them from further management consideration.

Table 2. Fairbanks area waters tested for dissolved oxygen, 1980.

Water	Date	Ice Depth (in)	Water Depth (ft)	Snow Depth (in)	Sample Depth (ft)	D.O. ppm
Silver Fox Pit	Apr. 2	48	9.5	0	4.5 4.5	3.2 4.0
Weigh Station Pond #1	Apr. 2	24	24+	12	5.0 24.0	6.5 2.0
Weigh Station Pond #2	Apr. 2	24	22	12	5.0 20.0	4.0 1.8
Grace Ford Pond** (North Pole)	Apr. 1	24	11	12	6.0 10.0	6.0 0.0
Ed Walters Pond** (Nordale Road)	Apr. 1	24	7	12	3.0 6.0	7.5 6.5
Eielson AFB:						
Bear Lake (small portion)	Mar. 24	25	14.5	12	5.0	2.0
Bear Lake (large portion)	Mar. 24	29	20.0	6	5.0	0.0
Grayling Lake*	Mar. 26	31	12.0	8	5.0	1.8
Hidden Lake*	Mar. 26	22	10.0	9	5.0	0.8
Engineer Hill Lake* (Lily Lake)	Mar. 24	31	7.5	3	4.0	1.6

Table 2. (Cont.d) Fairbanks area waters tested for dissolved oxygen. 1980.

Water	Date	Ice Depth (in)	Water Depth (ft)	Snow Depth (in)	Sample Depth (ft)	D.O. ppm
Moose Lake* (North Half)	Mar. 25	36	19.0	2	4.0 5.0 10.0 15.0	4.0 3.0 1.8 0.0
Moose Lake* (South half)	Mar. 25	36	22.0	2	5.0 10.0	2.0 1.6
Mullens Pits (large)	Mar. 24	31	20.0	2	5.0	2.0
Mullens Pits (small)	Mar. 24	31	18.5	4	5.0	0.0
Rainbow Lake	Mar. 25	24	16.0	8	5.0	0.6
Scout Lake	Mar. 25	27	14.0	8	4.0 5.0	5.0 3.0
Twin Lakes (Big twin)	Mar. 24	33	15.0	3	5.0	4.0
28 Mile Pit*	Mar. 26	27	14.0	4	5.0	9.0
338.7 Mile Pit (Richardson Hwy)	Mar. 26	26	17.0	7	5.0	0.0
Manchu Lake*	Mar. 27	31	9.0	3	5.0	7.0

* Indicates lakes currently managed.

** Indicates privately owned ponds tested at owners request.

Fish Sampling in Area Waters

Thirty lakes and ponds in the Fairbanks area were sampled to determine species composition and stocking success (Table 3).

Dune Lake, a fly-in lake located 24 mi southwest of Nenana, was stocked with grayling fry in 1976 after test netting revealed no fish were present in the lake. In 1980 the grayling ranged in fork length from 310 to 345 mm (12.2 to 13.6 in) and averaged 331 mm (13 in). This is good growth for Age IV grayling, as Age IV grayling captured from the Chena River in 1980 averaged only 231 mm (9.1 in), (Hallberg 1981).

Engineer Hill Lake, located on Eielson AFB, was rotenoned in 1976 to rid the lake of lake chubs. The lake was restocked with grayling in 1977. Test netting in 1980 revealed a good population of grayling with an average length of 292 mm (11.5 in).

Eight-mile Lake, located 8 mi west of the Parks Highway on the Stampede Trail, contains a natural population of grayling and round whitefish. Test-netting revealed that some of the grayling had spawned or were partially spawned by May 29. This was approximately 7 days after the ice went out on the lake.

Fifteen managed gravel pits were also test-netted for age and growth information.

Four privately owned gravel pits near Fairbanks were test-netted at the request of the owners to investigate the possibilities of establishing a future sport fishery.

Nine additional lakes were surveyed in the Beaver Creek and Birch Creek drainages north of Fairbanks. The lakes were numbered for ease in identification and to allow for unnamed lakes. Data on these lakes may be located in Table 3 and Figures 2-10. All lakes surveyed had angling potential for northern pike.

Lake #1 (Fig. 2). This 240-acre lake is located approximately 85 mi north of Fairbanks at lat. 66° 05'N; long. 147° 35'W and has a surface elevation of 580 ft. The maximum depth is 35 ft. Water chemistry on July 11 was: hardness 68 ppm, pH 7.75 and alkalinity 51 ppm. The water temperature was 66°F. Test netting resulted in a catch of 18 northern pike and 15 least cisco.

Lake #2 (Fig. 3). This 160-acre lake is located approximately 85 mi north of Fairbanks at lat. 66° 05'N; long. 147° 35'W and has a surface elevation of 525 ft. The maximum depth is 22 ft. Water chemistry on July 11 was: hardness 68 ppm, pH 7.75 and alkalinity 68 ppm. The water temperature was 67°F. Test netting resulted in a catch of seven northern pike and five broad whitefish.

Lake #3 (Fig. 4). This 180-acre lake is located approximately 85 mi north of Fairbanks at lat. 66° 06'N; long 147° 33'N and has a surface elevation

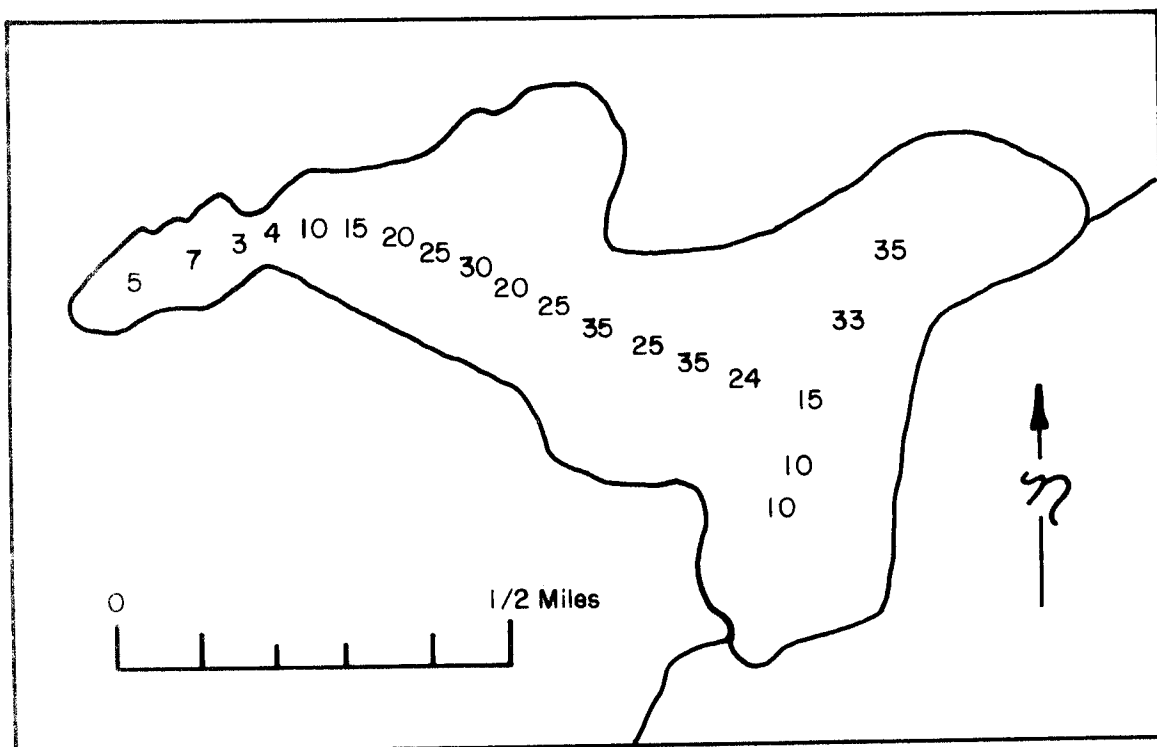


FIGURE 2. LAKE NO.1. DEPTHS ARE IN FEET.

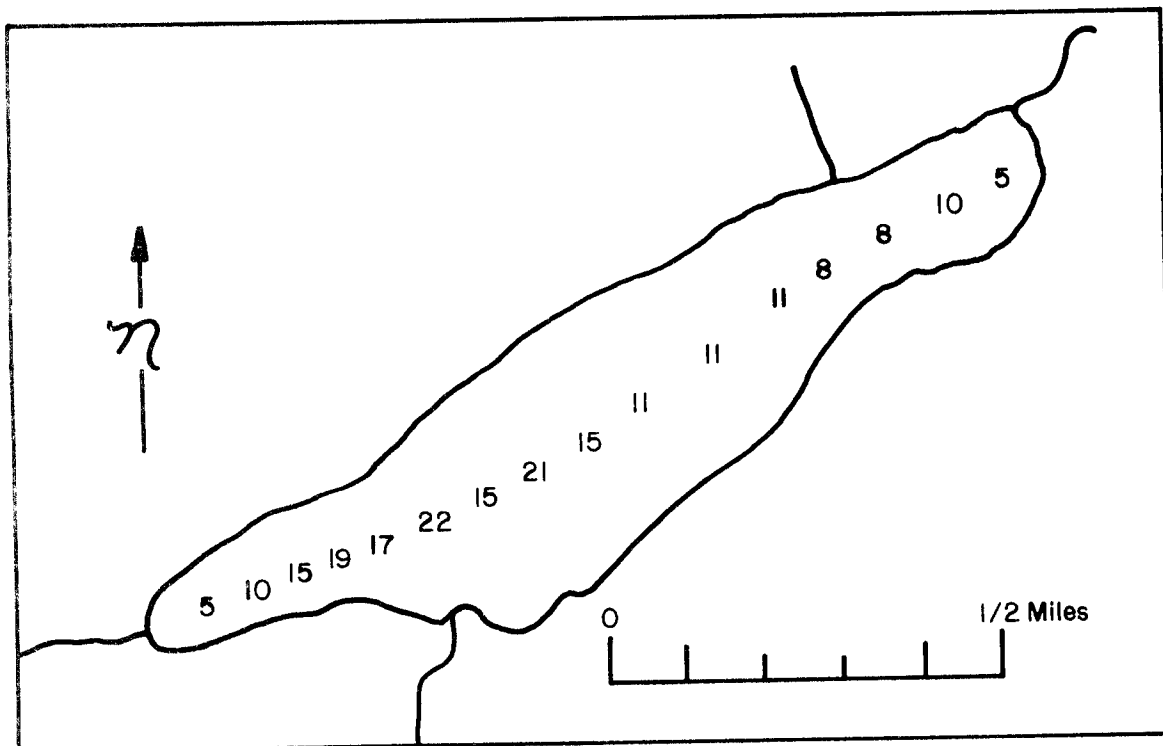


FIGURE 3. LAKE NO.2. DEPTHS ARE IN FEET.

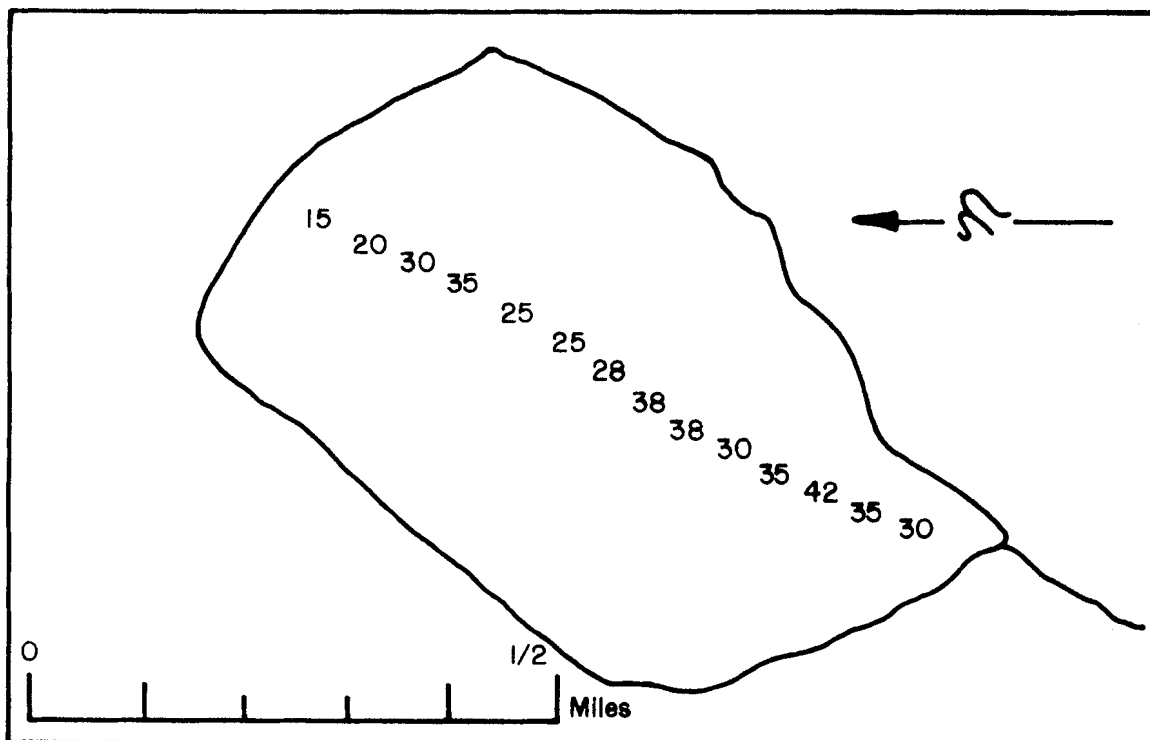


FIGURE 4. LAKE NO.3. DEPTHS ARE IN FEET.

Table 3. Fish sampling summaries, 1980.

Water	Date	Species	No.	Age	Fork Length mm		Weight (gms)		Frequency* & General comments
					Range	Mean	Range	Mean	
70	1	7-13	NP	18	330-788	479	340-3,629	1,247	0.38
			LCI	15		254		340	0.31
	2	7-13	NP	7	305-788	577	227-4,536	2,139	0.29
			BWF	5	560-597	577	3,289-3,629	3,516	0.21
	3	7-13	NP	15	292-648	480	227-1,814	990	0.31
	4	7-14	NP	21	356-736	457	227-2,948	848	0.88
			LCI	1					Found in stomach of Pike.
	5	7-14	NP	3	496-534	513	794-1,134	945	0.12
	6 (Burman Lake)	7-15	NP	6	444-635	542	680-1,814	1,228	0.12
			NP	1		165			0.02
			BB	2	610-660	635	1,814-2,041	1,928	0.04
	7	7-17	NP	16	330-648	581	340-1,701	1,432	0.67
	8	7-17	NP	14	280-660	543	227-1,928	1,264	0.58
	9	7-17	No Fish Captured						
	Dune Lake	5-29	GR	17	310-345	331	327- 508	427	Hook & Line Deformed Fish
				1		230		341	
	Nenana Pond	8-21	RWF	12	110-390	298			0.50
			GR	2	220-230	225			0.08
			LNS	15	105-220	138			0.62
			LC	2	100-110	105			0.08
			SS	3	90-110	98			0.12

Table 3. (Cont'd) Fish sampling summaries, 1980.

Water	Date	Species	No.	Age	Fork Length mm		Weight (gms)		Frequency* & General comments
					Range	Mean	Range	Mean	
Lakeview #1	9-18	NP	3		560-700	653			0.12
		LCI	16		225-330	262			0.67
Lakeview #2	9-18	No Fish							
Lakeview #3	9-18	HWF	6		465-520	492			0.25
		LCI	9		210-270	243			0.38
		NP	1			585			0.04
Lakeview #4	9-18	LCI	23		220-285	241			0.96
		BB	1			575			0.04
8 Mile Lake	5-29	GR	1	IV	220	220	111	111	0.02
			9	V	235-280	254	118-206	155	1.8
			12	VI	220-290	264	139-252	175	2.4
Richardson Hwy Lakes									
31 Mile Pit	7-1	GR	8	I	115-140	127			0.34
			3	II	205-210	207			0.13
			2	III	200-210	205			0.08
			3	IV	195-235	222			0.13
			7	V	210-240	226			0.29
		LC	2		105-120	113			0.08
		LNS	4		205-230	221			0.17
		Engineer Hill Lake	7-2	GR	55	III	270-305	292	
28 Mile Pit	7-1	SS	1	I		170			0.04
			2	III	240-240	240			0.08
Johnson Pond Pit #1	7-1	GR	7	II	225-295	239			0.29
			3	IV	280-295	287			0.13

Table 3. (Cont'd) Fish sampling summaries, 1980.

Water	Date	Species	No.	Age	Fork length mm		Weight (gms)		Frequency* & General comments
					Range	Mean	Range	Mean	
Johnson Pond Pit #2	7-01	GR	2	II	175-190	183			0.08
Grayling Lake	7-02	LCI	10		260-330	289			0.42
		SF	1	VII		515		1,446	0.04
Bathing Beauty Pond	7-01	GR	6	V	195-210	202			0.25
Birch Lake Pit	7-02	GR	18	V	185-210	198			0.75
Hidden Lake	7-02	GR	5	II	190-200	196			0.21
Steese Highway Lakes									
29.6 Mile Pit	8-19	GR	4	0	105-110	106			0.17
			3	II	180-205	195			0.13
			6	III	200-225	214			0.25
			1	IV		230			0.04
			2	V	230-240	235			0.08
		RWF	8		270-310	288			0.33
31.6 Mile Pit	8-19	GR	4	II	175-205	196			0.17
		RWF	1			430			0.04
		BB	1			270			0.04
33 Mile Pit	8-19	GR	13	0	105-120	113			0.54
			1	III		265			0.04
			1	V		280			0.04
		RWF	2		395-420	408			0.08

Table 3. (Cont'd) Fish sampling summaries, 1980.

Water	Date	Species	No.	Age	Fork Length mm		Weight (gms)		Frequency & General comments
					Range	Mean	Range	Mean	
33.5 Mile Pit	8-19	GR	1	0		105			0.04
			4	II	200-205	203			0.17
34.6 Mile Pit	8-19	GR	2	II	145-190	168			0.08
			3	V	240-270	257			0.13
36.5 Mile Pit	8-19	GR	1	0		105			0.04
			1	I		200			0.04
			4	II	210-230	223			0.17
		RWF	2		410-430	420			0.08

* Fish per net hour in a 125 foot long graduated mesh gill net.

of 580 ft. The maximum depth is 42 ft. Water chemistry on July 11 was: hardness 239 ppm, pH 8 and alkalinity 239 ppm. Water temperature was 66°F. Test netting resulted in a catch of 15 northern pike.

Lake #4 (Lower Halfway Lake), (Fig. 5). This 280-acre lake is located approximately 90 mi north of Fairbanks at lat. 66° 05'N; long 146° 55'W and has a surface elevation of 700 ft. The maximum depth is 70 ft. Water chemistry on July 14 was: hardness 171 ppm, pH 8 and alkalinity 171 ppm. Water temperature was 65°F. Test netting resulted in a catch of 21 northern pike and one least cisco.

Lake #5 (Fig. 6). This 680-acre lake is located approximately 95 mi north of Fairbanks at lat 66° 06'N, long 146° 24'W and has a surface elevation of 697 ft. The maximum depth is 90 ft. Water chemistry on July 14 was: hardness 188 ppm, pH 8 and alkalinity 171 ppm. Water temperature was 66°F. Test netting resulted in a catch of three northern pike.

Lake #6 (Burman Lake), (Fig. 7). This 800-acre lake is located approximately 100 mi north of Fairbanks at lat. 66° 05'N, long. 145° 59'W and has a surface elevation of 675 ft. The maximum depth is 95 ft. Water chemistry on July 15 was: hardness 103 ppm, pH 8.5 and alkalinity 85 ppm. Water temperature was 66°F. Test netting resulted in a catch of seven northern pike and two burbot.

Lake #7 (Fig. 8). This 140-acre lake is located approximately 105 mi north of Fairbanks at lat. 66° 07'N, long. 145° 51'W and has a surface elevation of 725 ft. The maximum depth is 60 ft. Water chemistry on July 16 was: hardness 205 ppm, pH 8.5 and alkalinity 188 ppm. Water temperature was 66°F. Test netting resulted in a catch of 16 northern pike.

Lake #8 (Fig. 9). This 240-acre lake is located approximately 100 mi north of Fairbanks at 66° 04'N, long. 145° 45'W and has a surface elevation of 680 ft. The maximum depth is 60 ft. Water chemistry on July 17 was: hardness 103 ppm, pH 8.5 and alkalinity 85 ppm. Water temperature was 67°F. Test netting resulted in a catch of 14 northern pike.

Lake #9 (Fig. 10). This 120-acre lake is located approximately 83 mi north of Fairbanks at lat. 65° 56'N, long. 146° 35'W and has a surface elevation of 1,000 ft. No fish were caught in a single experimental gill net set overnight.

Creel Census

A spear fishing season for whitefish in the Tanana River drainage was initiated in 1970 to provide an additional method for sport fishermen to harvest these desirable fish. A creel census has been taken every fall since 1972, except 1975, on the Chatanika River where most of the fishing pressure occurs. A creel census station was set up at the Elliot Highway Bridge to count fishermen and their catch. The census covered 33% of the possible fishing time throughout the period from September 5 through October 22, 1980.



FIGURE 5. LAKE NO. 4. "LOWER HALFWAY LAKE". DEPTHS ARE IN FEET.

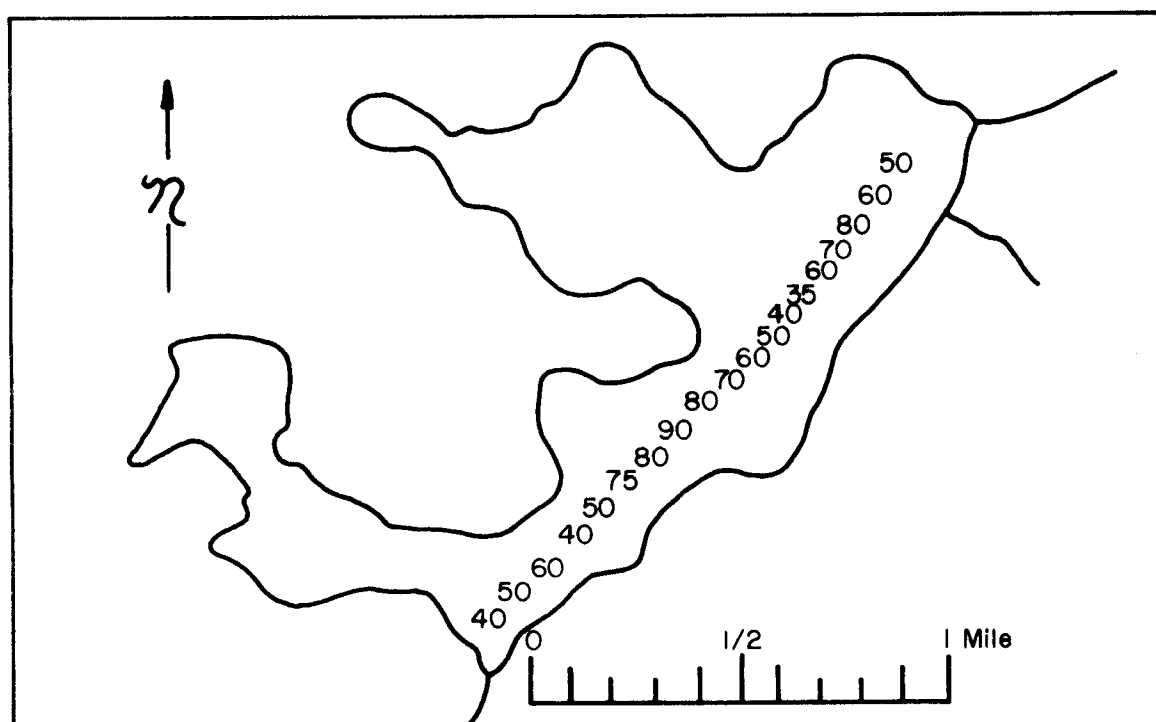


FIGURE 6. LAKE NO. 5. DEPTHS ARE IN FEET.

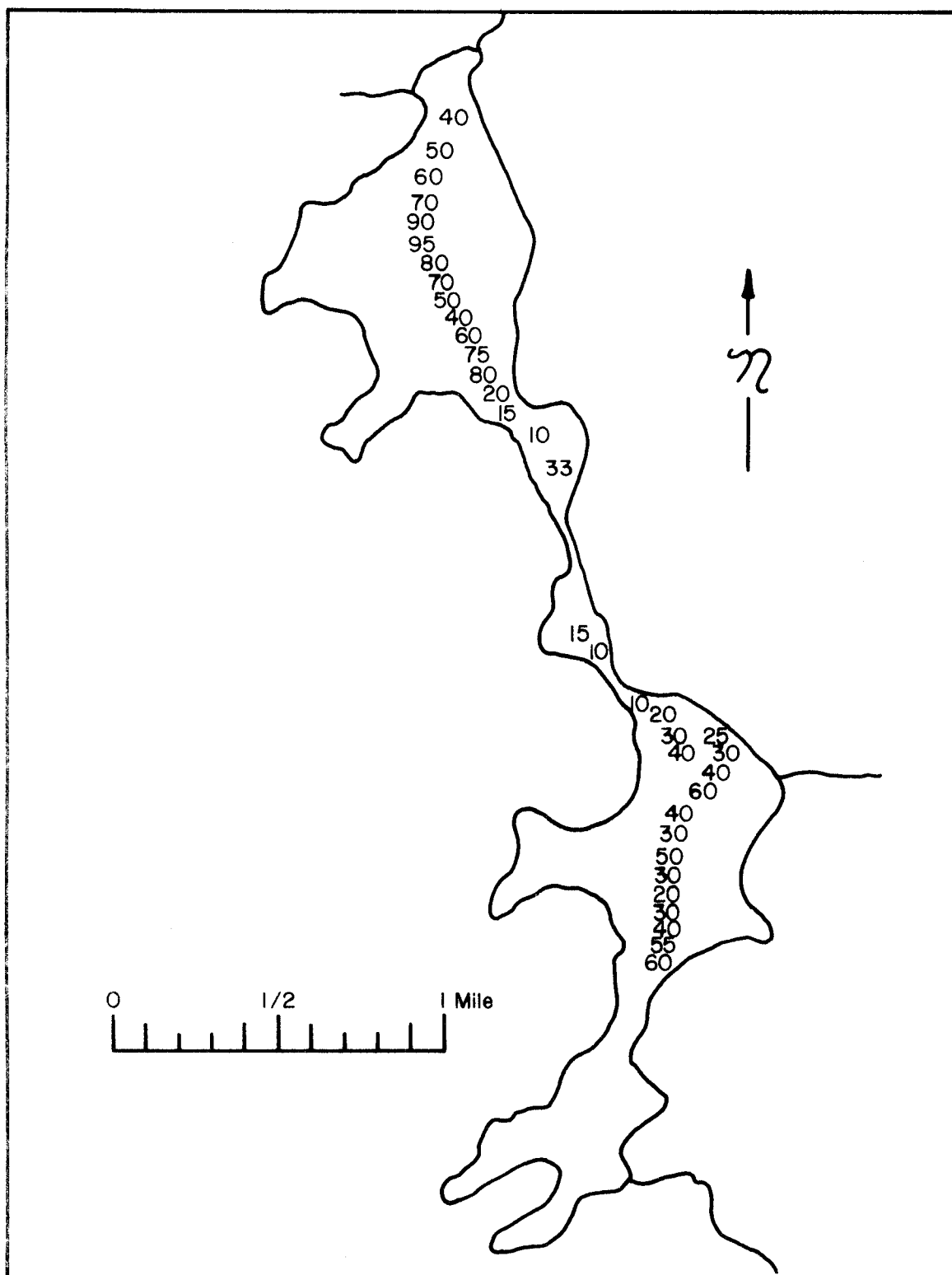


FIGURE 7. LAKE NO.6 "BURMAN LAKE". DEPTHS ARE IN FEET.

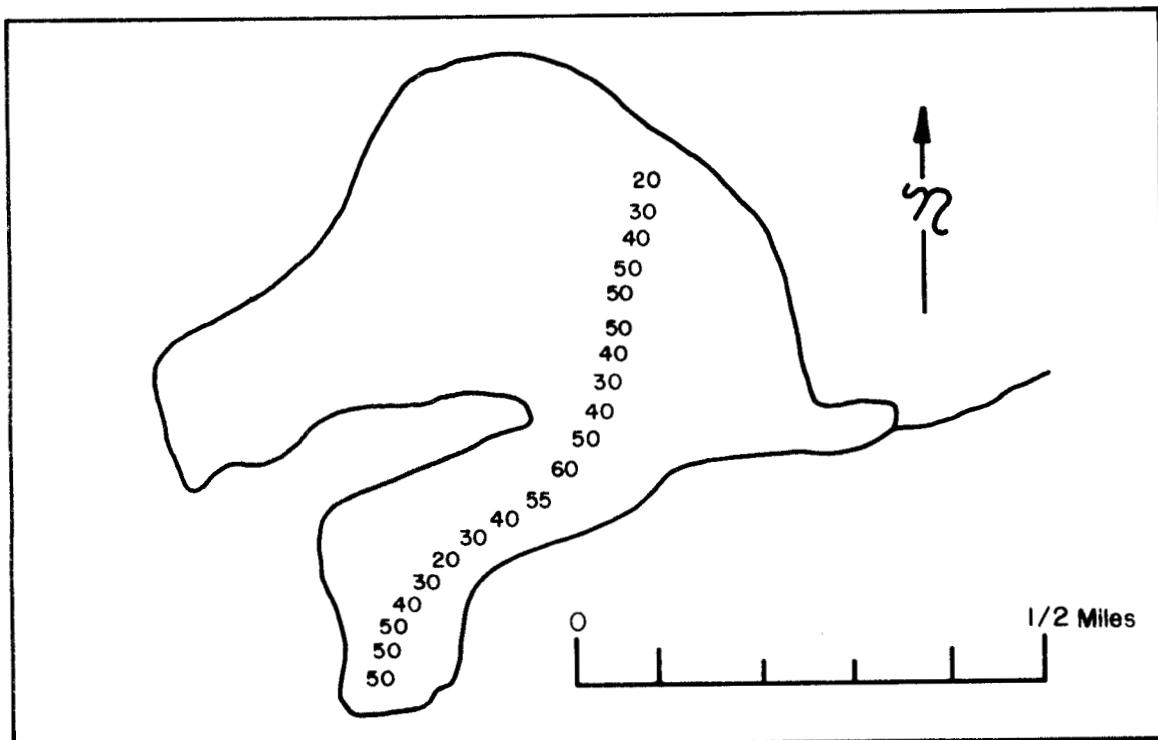


FIGURE 8. LAKE NO. 7. DEPTHS ARE IN FEET.

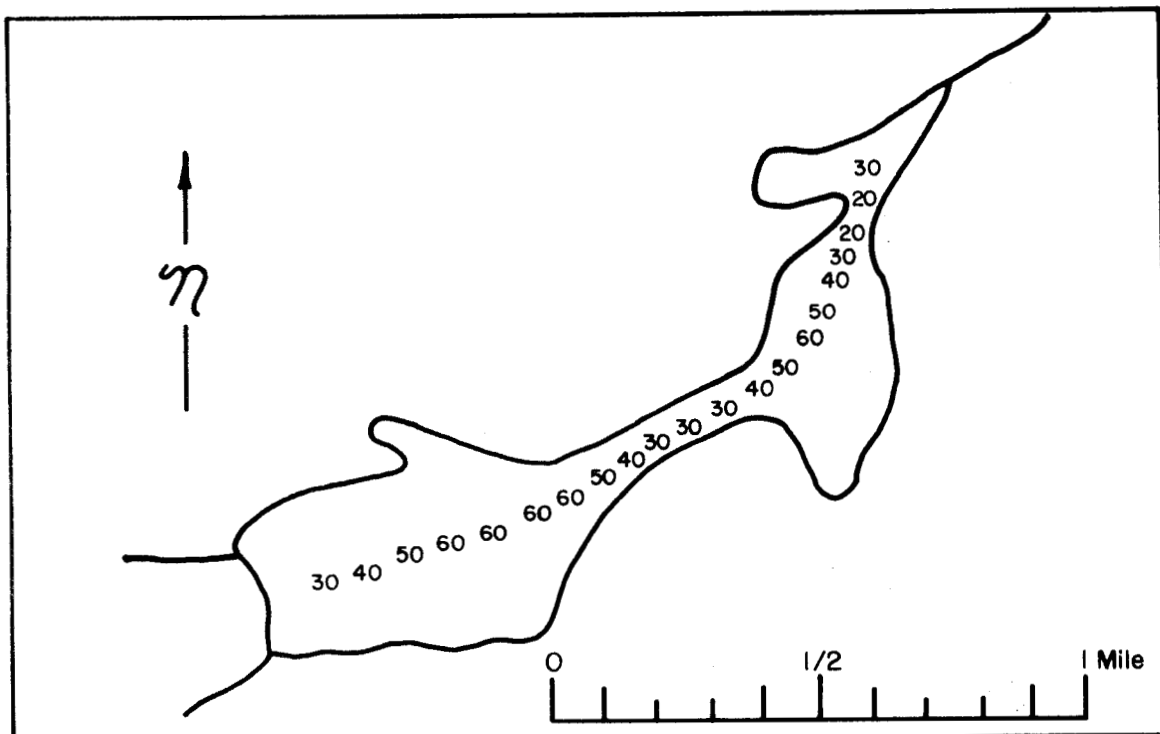


FIGURE 9. LAKE NO. 8. DEPTHS ARE IN FEET.

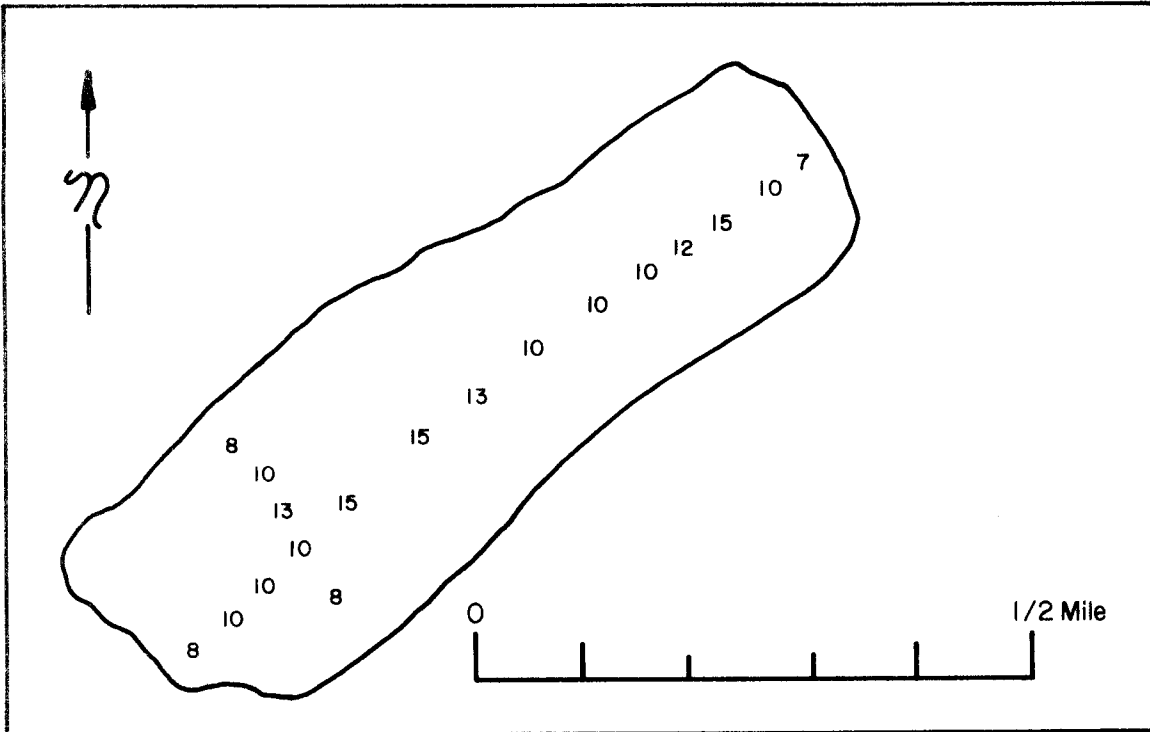


FIGURE 10. LAKE NO. 9. DEPTHS ARE IN FEET.

An expansion of the data to 100% shows that 552 fishermen fished 1,026 hours to spear 493 humpback whitefish, 1,010 least cisco, and 84 round whitefish (Table 4).

The average whitefish speared per hour was 1.5, which is slightly lower than the average from 1972-1979 of 2.6 and the 1979 figure of 2.4 per hour. Spearing success was very low until September 25 when the river, which had been muddy most of the summer, became clear. Seventy-four percent of the humpback whitefish, 93% of the least cisco and 70% of the round whitefish speared in the fishery were harvested from September 25 to October 22. A summary of spear fishing harvests in the Chatanika River from 1972-1980 is presented in Table 5.

Visual population estimates, as conducted in former years, were not made during 1980 due to the severe muddy water condition of the Chatanika River.

Lake Rehabilitation

Moose Lake, which has 23 surface acres, and is located on Eielson AFB was chemically treated on September 16, 1980 to rid the lake of a stunted northern pike population. Liquid rotenone was used at a concentration of 1 ppm. The lake will be test-netted to check for a complete eradication of fish in the spring of 1981 and will be restocked with game fish.

Lake Stocking

Four lakes were stocked in the Fairbanks area during 1980 (Table 6). Birch Lake was stocked with 59,850 coho salmon fingerlings and 55,074 sub-catchable rainbow trout at 18/lb. Lost and Geskakmina Lakes were stocked with fingerling cohos and Koole Lake was stocked with fingerling rainbow trout.

Table 4. Chatanika River whitefish harvest summary September 5,
through October 22, 1980 in area of Elliot Highway bridge.

	<u>Calculated Totals</u>
Number of fishermen	552
Number of angler hours	1,026
Total harvest	1,587
Fish/angler hour	1.5
Fish/angler trip	2.9
Mean hours per angler trip	1.9

Calculated fish harvest by species:

	<u>Number</u>	<u>Percent of Harvest</u>
Humpback whitefish	493	31
Least cisco	1,010	64
Round whitefish	84	5

Table 5. Chatanika River whitefish harvest summary, 1972-1980.

Year	Date	Angler Hours	Hours Per Trip	Fish Per Hour	Fish Per Trip	Total Whitefish Harvested
1972	Oct. 1-16	302	1.7	2.3	3.9	701
1973	Sept. 1-Oct. 7	1,356	2.5	2.2	5.6	3,032
1974	Sept. 1-Oct. 4	1,054	2.6	1.8	4.7	1,924
1976	Sept. 1-Oct. 12	300	2.7	1.8	4.9	540
1977	Sept. 1-Oct. 16	416	1.7	2.4	3.9	986
1978	Sept. 9-Oct. 21	968	2.0	5.7	11.6	5,515
1979	Sept. 12-Oct. 12	919	2.4	2.4	5.5	2,183
1980	Sept. 5-Oct. 22	1,026	1.9	1.5	2.9	1,587

Table 6. Lake Stocking, Fairbanks District.

Lake	Location	Date	Species	Size	Number
Birch Lake	Richardson Highway	May 22	RT	18/lb	50,000
		June 5	RT	18/lb	5,074
		May 27	SS	160/lb	55,063
		May 27	SS	160/lb	4,787
Lost Lake	Richardson Highway	May 27	SS	217/lb	19,990
Geskakmina Lake	35 Miles West of Nenana	May 27	SS	292/lb	17,074
		May 27	SS	292/lb	2,926
Koole Lake	55 Miles SE of Fairbanks	June 23	RT	413/lb	42,927

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